gneisses, with their accompanying coarse limestone and graphite; and, to the latter, a large part of the chlorite and mica schists, and serpentine, with associated limestone, steatite, and argillite, and chrome and nickel ores, east of the Susquehanna, and the felsitic, chloritic, epidotic, and quartzose rocks of the South Mountain.

The felsites are said to be distinctly interstratified with the other rocks named, and the theory of their igneous origin is vigorously combated. The position of the Huronian in this region is shown to be clearly above the Laurentian, and below the primal sandstone; but it is also allowed to fill this great gap, to the exclusion of the Montalban system, which Dr. Hunt has recognized here.

The Taconian system is not admitted to the Pennsylvania column; but the quartzite, schists, marble, argillite, and iron-ores claimed by its defenders are referred, as by the first survey, and by Lesley, Dana, etc., to the Cambrian. With the exception of the Scolithus, found in a small part of the so-called primal or Potsdam series, all these rocks are alike unfossiliferous. Lithologically and stratigraphically they present little resemblance to the primal, auroral, and matinal west of the great valley and in New York; and hence the confident reference of these semi-crystalline rocks to the horizons named seems to rest on a very slender basis of facts.

NOTES AND NEWS.

The English astronomers continue their observations of the great red spot on the planet Jupiter with all the enthusiasm of past years; one observer, Mr. Stanley Williams, obtaining, as early as the morning of Sept. 20, a favorable sight of that part of the disk of Jupiter which should be occupied by the red spot. It was still a visible object, although, at the then unfavorable position of the planet, one of extreme difficulty and delicacy. Only a very occasional glimpse of it could be obtained at all, as a faint patch of no particular color or boundary, until after its transit of the central meridian, when the spot was once seen in its entirety, and with a distinct reddish tinge about it. The great hollow in the red south equatorial belt still remains visible, but it appears to have much diminished in plainness. Mr. Williams has also observed three equatorial white spots, one of which is probably identical with a well-known white spot which has been followed for many years. The red spot has also been re-observed by Mr. Denning.

— At the October meeting of the Natural science association of Staten Island, Mr. Davis exhibited a specimen of one of our green grasshoppers, Conocephalus dissimilis, which he had found without any head, and stridulating while perched upon a blade of grass. When touched by the finger, the insect did not close its wings tightly, as usual, but let them remain far apart. It had evidently not been long decapitated; for, when captured, the muscles in the thorax had their normal appearance. But gradually the tissues dried, and on the third day of its captivity it died without having stridulated again, though every means thought of was employed to induce it.

— Dr. David Gill, her majesty's astronomer at the Cape of Good Hope, will contribute the article on parallax for the forthcoming volume (xviii.) of the ninth edition of the Encyclopaedia Britannica.

— Dr. E. B. Tylor, in an address to the anthropological society of Washington a few weeks ago, in which he narrated some of his experiences among the Mohaves and Zuñis last summer, said the Mohave has the same abhorrence of parting with a lock of his hair that is shown by an Italian or a Spaniard. The Zuñi uses the same sound-producing piece of wood to warn the women away from certain rites attending the admission of youths to the privileges of manhood as is used for a like purpose both in Africa and Australia. The latter consists of a piece of wood attached to a thong, and well known in England as a 'bull-roar,' from the character of the noise it makes when whirled rapidly. The use of bark skirts by the Zuñi women, who now wear a part of them under their joined red handkerchief robes, is paralleled by that of the Australian females. The Zuñis wore these originally in two parts, — one in front, and the other at the back, — forming, when both in place, a complete covering for the lower part of the body. Now that cotton-cloth is procurable, they make a skirt of bright-colored handkerchiefs sewed together, and wear this outside the bark garment, only the rear half or bustle of which they wear. The Australian women preserve the ancient custom by putting on bark skirts on festival occasions. Both customs show a tendency to survival, and a corresponding mode of perpetuating an ancient usage.

— A correspondent of the *Science monthly* writes that for the last year he has been engaged in the herring-fishery on the Kintyre coast, and has often been surprised during the night to hear a strange chirping-sound, like the far-away disconsolate 'chirp' of some small dying bird. "It was something in the air, and always portended southerly winds and foul weather, and was known everywhere as the 'Cheepach,'" was all the explanation that his mates had to offer. It is most frequently heard from the beginning of August till the end of November, and is never heard before sunset or after sunrise, but always during the darkness of night. It is never heard ashore, but often enough within two or three hundred yards of it. It is generally heard whilst sailing, but sometimes, though rarely, while lying at anchor. It is always accompanied by a dampness in the atmosphere, though never with rain, so far as he remembers. The sound is so very like the chirp of a bird that superstitious fishermen attribute it to the ghosts of little birds that have blown to sea and drowned.

— Professor James Hall has been elected member of the French academy in the place of the late Dr. J. Lawrence Smith.

— The experiments on the relative efficiency of different illuminants for lighthouse purposes, which are being carried out in England by the Trinity brethren, have in some respects been completed; and they support the conclusions previously arrived at, in that there seems to be little difference between gas and paraffine-oil for all practical purposes, except that the gaslight is slightly superior in fine weather, but then the electric light has proved vastly better than either. The crucial test of the latter, however, is in hazy weather; and it is stated, that, in some of the observations made when the weather was rather thick, this light did not hold its own against the other illuminants. Important tests will be made this autumn, when hazy weather, and a greater variety in the conditions of the atmosphere, may be expected.

— A well-equipped expedition to East Africa will be undertaken by Dr. Dominik von Hardeggar in the autumn. The first object of the expedition will be to explore the stretch of country between Sela and Harar, then that town itself and its neighborhood. Lastly, if the circumstances are favorable, it will penetrate the land of the Somali to Ogaden, or go through to Schoa. The geographical and ethnographical studies of the expedition will be undertaken by Professor Paulitschke; the geological and zoölogical, by Dr. von Hardeggar himself. A physician and assistant naturalist will accompany the party.

— The university of Freiburg, in Saxony, is to have an institute of zoölogy, Professor Weismann having made it a condition of his remaining there.

— The seventh general congress of German analytical chemists was held this year at Munich on the 9th of August, and the work of the honorary committee continued. The resolutions passed mostly referred to the restrictions of the German laws.

— At a recent meeting of the Physiological society of Berlin, Professor Kronecker spoke of a series of precautionary measures to be observed in cases of saving life by an infusion of common salt solution. He first described how animals, after severe loss of blood, recovered in the best and most rapid manner by introducing into their blood-channels a like quantity of common salt solution. In the case of infusions of albuminous solutions, of serum sanguinis, and even of the blood of another individual of the same species deprived of its fibrine, there was, according to direct measurements, an invariable destruction of blood-corpuscles. With infusions of common salt solution, on the other hand, blood-corpuscles were seen to increase somewhat rapidly. Professor Kronecker then proceeded more particularly to lay down precautionary rules to be observed in applying this agency to man. In the first place, the composition of the solution must be such as was most compatible with the human organism. It would appear that a solution of 0.73 % exercised the least irritation on the human body, and was therefore the most appropriate for infusions designed to save life. The addition of the carbonate of an alkali, recommended by some, had an injurious effect. Of great importance were the velocity and pressure with which the infusion was injected: both ought to correspond with the velocity and pressure in the vein into which the solution entered. The common salt solution should, further, be disinfected beforehand by boiling, and the air which penetrated into the reservoir while it was being emptied must be filtered by means of a wadding stopper. The injurious effect of too strong pressure was illustrated by a comparative experiment on two rabbits.

— The reduction in letter-postage from three to two cents commenced on Oct. 1, 1883. It is interesting to note the effects of this reduction on the postal business of the country as deduced from the returns for the year ending June 31, 1884. During the first three months of the year the three-cent rate was in effect, and the sale of stamps was much reduced in anticipation of the reduced rate. The increase in the sale of ordinary postage-stamps for the five years ended June 31, 1883, was 10.1 %; for the year 1883 the increase was 8.6 %. It is probable, that, owing to the general stagnation in business industries, the increase would have been less than 8 % in 1884 but for the reduction of postage. There was, however, an actual increase of 21 % in the number of 'ordinary postage-stamps' sold, or from 1,202,743,000 to 1,459,768,000, — an increase of 12.4 % over the year 1883, and of 11 % over the average increase for five years. The revenue from the sale of these stamps was $30,307,000 in 1883, $29,077,444 in 1884, — a diminution of $1,230,000, or 4 %. The issue of postal-cards has heretofore increased more rapidly than that of letters, or at the rate of 13.7 % a year on the average for the five years mentioned. During the last year the number diminished 4.4 %, or from 379,000,000 to 362,000,000. In the natural growth of the business, the postal revenue for the next year will probably be greater under the low rate than it has ever been under the high rate.

— Mr. Maxim, the electrician, has invented a machine-gun by which the energy of the recoil from one discharge is employed to load and fire the next round. The rate of firing is controlled by a lever; and, when the gun is once adjusted to a certain desired speed, it goes on firing at that rate until all the ammunition in the magazine is exhausted, whether the man in charge be killed or not. The maximum rate of firing, when the bullets have an initial velocity of twelve hundred feet per second, is six hundred rounds per minute.

— The U. S. signal-service is about to undertake the publication of a general bibliography of meteorology and allied topics (such as earthquakes, terrestrial magnetism, and meteors), and requests from the writers of all countries a complete list of their contributions to the literature of these subjects, including the titles of all separate works, papers, and published observations. The number of titles already on hand is about thirty-five thousand. Especial attention is invited to the importance of full titles,

with details of size, and place and date of publication. References to periodicals should be on this pattern: —

"Quetelet, Lambert Adolphe Jacques,
Sur les orages du mois d'Avril, 1865.
Bruxelles, Acad. Sci. Bull., XIX., 1865, 535-537."

Correspondence should be addressed to the chief signal-officer U. S. army, Washington.

— When the physical studies of the Gulf of Mexico and the Caribbean Sea, now prosecuted by the U. S. coast-survey, are brought to an end, and when our knowledge of the natural history of these waters is sufficiently increased, we shall hope to see a monographic description of them, after the pattern of Ackermann's admirable 'Beiträge zur physischen geographie der Ostsee' (Hamburg, Meissner, 1883). The arrangement of subjects is logical and systematic, and lacks but one chapter of being complete, for geological structure alone is not discussed. The first division of the book considers the form of the shores and bottom, under the heading of morphology, illustrated by bathymetric charts of fine execution; then, omitting the origin of this form, recent geological action along the shores, and the evidences of secular elevation and depression, are discussed. The physical relations of the sea are described under currents, winds and their effects, and the distribution of temperature; and the chapter on biology opens with a general discussion of the causes that influence the occurrence of marine life, followed by an account of the horizontal and vertical distribution of the fauna and flora, and concluding with the effect of the Baltic on the habitat of certain birds. The inward and outward flowing currents at the wider entrance to the sea are described in detail, and the tide is traced till it disappears with a height of only one centimetre at Memel.

— The geographical society at Halle has published a valuable local bibliography of physical and historical writings ('Die landeskundliche litteratur für Nordthüringen, den Harz,' etc., Halle, 1883), covering 170 pages, clearly arranged on a well-considered plan. It begins with natural-history topics (such as geology, hydrology, climate, fauna and flora), next taking questions that refer to population (such as anthropology, statistics, economics, and folk-lore), and ending with papers of special or historical interest; all of this being arranged, first for larger, and then for smaller, geographic areas. Maps of all kinds are included in the lists, and a good index to the various subdivisions allows easy reference to any subject or place.

— Scudder's 'History of the United States' (Philadelphia, J. H. Butter) belongs to the class of manuals which includes the histories by S. Eliot, T. W. Higginson, A. Gilman, and others; but our limits will not permit us to point out how it differs from them. Its typography is attractive; and it is a marvel that so many maps, portraits, and other engravings, can be given in a volume which is sold at so low a price. Among some of the novel illustrations may be named a map of the physical features of the United States, not entirely satisfactory; a map of the discoveries on the Atlantic seaboard in the fifteenth century; the progress of population westward in the United States; the sectional weather divisions employed by the U. S. signal-service; the standard-time belts; and a very large number of diagram-maps, most of which are admirable, inserted in the text to explain the wars, battles, progress of civilization, etc. The text is clear, readable, and concise.

— The fifteenth report of the Massachusetts bureau of statistics and labor, by Carroll D. Wright, contains an interesting paper on the condition of the working-girls in Boston; and this is followed by an elaborate study of the comparative wages, prices, and cost of living, in Massachusetts and Great Britain in the period between 1860 and 1883. As to wages, Mr. Wright's result is as follows: that the general average weekly wage of the employees in the industries considered in Massachusetts was 77 + % higher than the general average weekly wage of the employees in the industries considered in Great Britain. As to cost of living, it appears, that, on any basis of yearly expenditure, the prices of articles entering into the cost of living were, on the average, 17.29% higher in Massachusetts in 1883 than in Great Britain; that, of this figure, 11.49% was due to higher rents in Massachusetts, leaving 5.80% as indicative of the higher cost of living in Massachusetts as compared with Great Britain, as regards the remaining elements of expense.

— The American academy of medicine held its annual convention in Baltimore, Oct. 28–29, with Dr. Benjamin Lee of Philadelphia as president. None but medical men who have had a liberal collegiate education are eligible for membership in this association, which, among other things, endeavors to promote reforms and improvements in medical education.

— The Association for the advancement of women also held its annual meeting in Baltimore, Oct. 29, 30, and 31, under the presiding guidance of Mrs. Julia Ward Howe.

— The excellent 'Monthly reference-lists,' which are printed by Mr. W. E. Foster of the Providence public library, should be watched by scientific men as well as by literary readers. The August number (vol. iv. No. 8) contains a handy index to articles on earthquakes, theories and observations, which was suggested by the shock of Aug. 10, 1884. In judging of the list of memoirs and articles which are cited, the reader should remember that it is prepared for popular reading, and not as an index for the seismologist, or even for the physicist. The second part of the same number is devoted to the early English explorations of America.

— The portrait accompanying our account of Sir William Thomson was engraved from a photograph taken in Canada. Sir William has since sat for a photograph in Baltimore, copies of which can be had on application to Cummins, photographer, 7 North Charles Street, Baltimore.

— Ensign E. E. Hayden of the U. S. navy has been ordered to duty at the Harvard observatory.